CT

[1]

. . ². .

:

.

: 29 30
. CT
, . grade
House- Brackmann grading scale grade I- IV , grade V
90%
- , 90% .
: 20 , 2 , 7 , 1
.
22 , 10 ,
5 9 , 2 25
4
1 .
(n= 8) (n= 22)
(n= 17) (n= 4) . (n= 13)
(n= 12) - (n= 14) 10
, 3 .
. 29 24 5
4 . 10
5 4 5 3
.
:
CT ,
. CT

.

, , 30% 80% .
CT ,
10% 50%
(1, 2) . . ,
CT .
1) CT

¹
²

:   CT

3)   CT

          .   .   CT

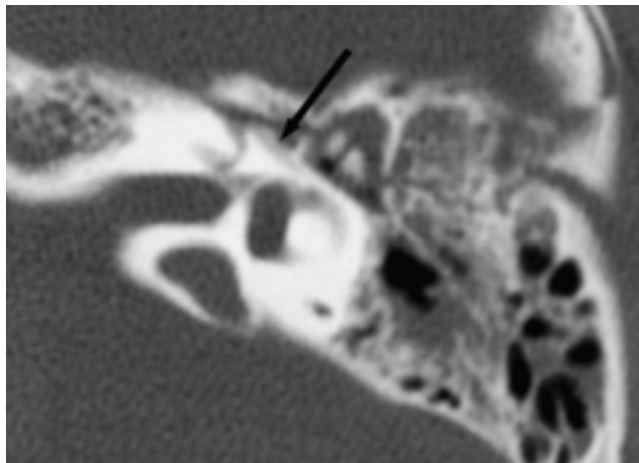(discontinuity) (Fig. 1),   (bony spicule or fragment),   (displacement) (Fig. 2),   (widening) (Fig. 3),   (adjacent bone fracture) 5

29 (24 , 5 ,   6- 68 ,   39)

     ,   1   30   CT . CT   CT HiLight Advantage (General Electric, Milwaukee, WI)   , 1.5 mm   edge algorithm   bone window setting   .
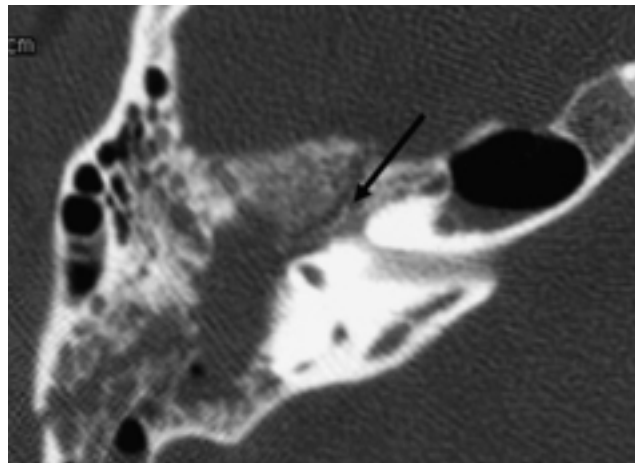
   CT

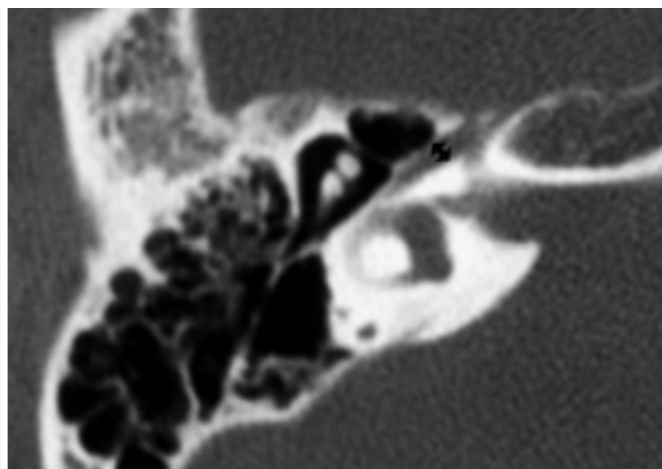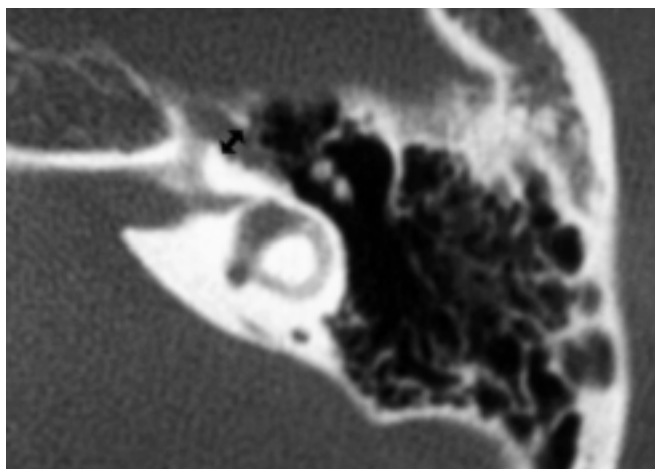.   (widening)

.   ,   ,

(direct finding)   ,

Fig. 1. Bony wall discontinuity without displacement
Axial CT shows complex fracture with discontinuity only of bony wall of the facial nerve canal (arrow).

Fig. 2. Bony wall discontinuity with displacement
Axial CT shows longitudinal fracture with discontinuity and displacement of bony wall of the facial nerve canal with canal widening (arrow).

**A**   **B**

Fig. 3. Widening of bony canal without evidence of facial nerve canal fracture
A. Axial CT show complex fracture in tympanic bone and widening of the facial nerve canal, which is one of indirect finding (arrow).
B. Compare the width of involved facial nerve canal with that of contralateral side (arrow).

(indirect finding) . . 2 12

, 3 5 1.5-3.3

(Electroneuronography;EnoG) (2.1) .

. grade House-Brackmann grading

scale grade I-IV , grade V

CT

90% 30

- , 90% 20 , 7 , 2 .

1

. House-Brackmann grading .

scale 20

- 15 , 8

. 7 3 ,

Fisher's exact test . 29 4 , 1

. 2 1 ,

Table. Differences of Fracture Patterns between Partial (I-IV) and Complete (V-VI) Facial Nerve Palsy Groups, and between Mild-moderate (below 90%) and Severe (90% and over) Nerve Degeneration Groups

Fracture patterns	H-B grade(30)		ENoG(27)degeneration	
	I-IV (22)	V-VI (8)	< 90% (14)	90% < (13)
Discontinuity(22)	16	6	11	10
Discontinuity /c disp(5)	1	4	2	3
Discontinuity /s disp(17)	15	2	9	7
Spicule(10)	4	6	0	9
FNC widening(9)	6	3	5	3
Adjacent fracture(2)	2	0	1	1
Direct signs (25)	17	8	10	12
Indirect signs only(4)	4	0	3	1

Note: Number in the parenthesis=number of patients, ENoG=electroneuronography, H-B grade=House-Brackmann grade, FNC=facial nerve canal, Discontinuity /c disp =discontinuity with displacement, Discontinuity /s disp = discontinuity without displacement
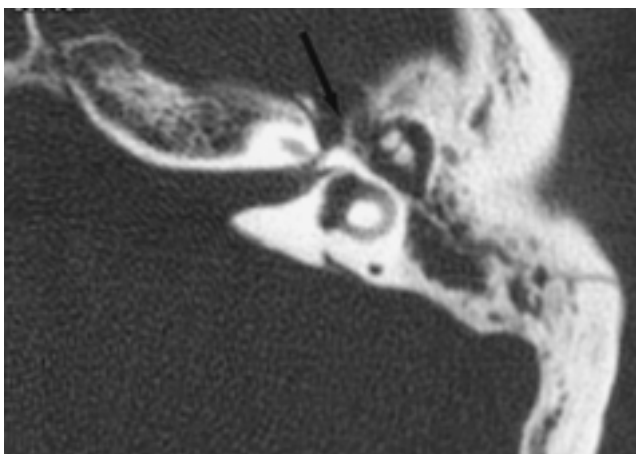
Fig. 4. A 42-year-old man with grade II facial nerve palsy after temporal bone injury.
Axial CT shows longitudinal fracture involving ganglionic segment of the facial nerve with discontinuity and displacement of bony wall of the facial nerve canal with canal widening(arrow).
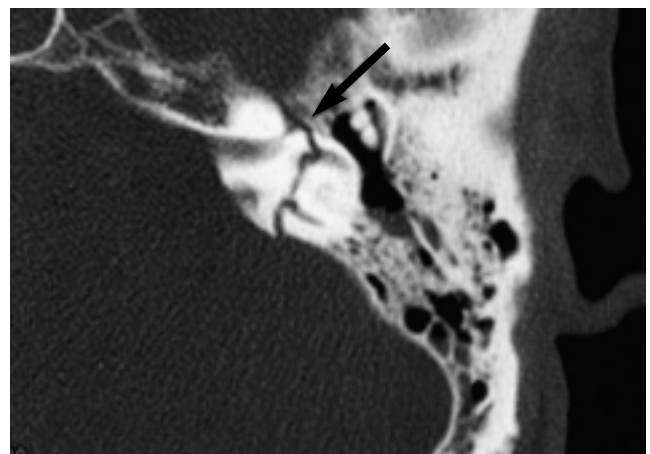
Fig. 5. A 47-year-old man with grade IV facial nerve palsy and 100% degeneration on electroneuronography.
Axial CT shows complex fracture involving ganglionic segment of the facial nerve canal and inner ear. The facial nerve canal is wide and reveals discontinuity and a bony fragment (arrow). This patient was operated and the bony fragment was removed. After surgery, symptom improved.

: CT

1 , , .

22 , 10 ,
5 25 ,
. 9 , .
2 , , ,
4 (Table) (Fig. 1- 5). ·
1 CT .
. 15 2 .
grade .
(n= 8) , (n= 22) 70% 90%
17 , 4 67% (2, 3). 10- 20%
. 27
(n= 13) 12 , (2). 20 18
1 , - .
(n= 14) 10 ,
3 (Table).
8 6 (75%)
22 4 (18%) (4, 5).

(Fisher's exact test, p 0.05). ,
-
(2, 6- 8).
(Fisher's exact 20%
test, p 0.05). 50%
.
ENoG (2,
(Fig. 4). , 8).
CT
30- 80%
(Fisher's exact test, p 0.01).
CT 1- 1.5 mm
ENoG 1 - (partial volume averaging)
.
29 24
5 . . CT
6 5 . , (bony wall)
5
4 , 2 , , ( ) ,
2 5
.
10 5 4 .
(Fig. 5) 1 . 30
5 2 25 (83%)
3 .

.

12

CT

House- Brackmann grading scale system
(10).
grade I   grade VI   6
     grade IV   ,
(grade V)   (grade VI)
.

90%

90%
(9- 11).
90%   -   ,
.

CT
CT
,   ($n=8$)
,   27
($n=13$)   12
. ,
.

-

ENoG

.

ENoG
90%

.

19   18
10   6
.   6   4
(Fig. 5).
CT

.

100%
.

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Traumatic Facial Nerve Palsy: CT Patterns of Facial Nerve Canal Fracture and Correlation with Clinical Severity[1]

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Purpose: To analyse the patterns of facial nerve canal injury seen at temporal bone computed tomography (CT) in patients with traumatic facial nerve palsy and to correlate these with clinical manifestations and outcome.

Materials and Methods: Thirty cases of temporal bone CT in 29 patients with traumatic facial nerve palsy were analyzed with regard to the patterns of facial nerve canal involvement. The patterns were correlated with clinical grade, the electroneurographic (ENoG) findings, and clinical outcome. For clinical grading, the House-Brackmann scale was used, as follows: grade I-IV, partial palsy group; grade V-VI, complete palsy group. The electroneuronographic findings were categorized as mild to moderate (below 90%) or severe (90% and over) degeneration.

Results: In 25 cases, the bony wall of the facial nerve canals was involved directly (direct finding): discontinuity of the bony wall was onted in 22 cases, bony spicules in ten, and bony wall displacement in five. Indirect findings were canal widening in nine cases and adjacent bone fracture in two. In one case, there were no direct or indirect findings. All cases in which there was complete palsy (*n* = 8) showed one or more direct findings including spicules in six, while in the incomplete palsy group (*n* = 22), 17 cases showed direct findings. In the severe degeneration group (*n* = 13), on ENog, 12 cases demonstrated direct findings, including spicules in nine cases. In 24 patients, symptoms of facial palsy showed improvement at follow up evaluation. Four of the five patients in whom symptoms did not improve had spicules. Among ten patients with spicules, five underwent surgery and symptoms improved in four of these; among the five patients not operated on, symptoms did not improve in three.

Conclusion: In most patients with facial palsy after temporal bone injury, temporal bone CT revealed direct or indirect facial nerve canal involvement, and in complete palsy or severe degeneration groups, there were direct findings in most cases. We believe that meticulous analysis and symptom correlation of the fracture patterns seen in facial nerve canal injury in patients with traumatic facial nerve palsy is helpful for treatment planning and prognosis.

Index words : Temporal bone, CT
Temporal bone, fractures

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